

What is claimed is:

1. A detection device for detecting ejection condition of an ejection member of a drop-on-demand type inkjet recording device, the detection device comprising:

5 a controller that controls the ejection member to eject a refresh ink droplet;

 a collector that collects the refresh ink droplet;

 a reflection means for reflecting the refresh ink droplet such that the reflected refresh ink droplet impinges
10 on the collector;

 a detecting means for detecting an ejection condition of the ejection member based on the refresh ink droplet.

2. The detection device according to claim 1, wherein:

 the controller selectively controls the ejection
15 member to eject a recording ink droplet at predetermined timings onto a recording medium, thereby forming a recording dot on the recording medium, and the controller controls the ejection member to eject the refresh ink droplet at a timing between the predetermined timings.

20 3. The detecting device according to claim 1, wherein the detecting means is provided common to all of a plurality of nozzles formed in the ejection member, and the controller controls the ejection member to eject the refresh ink droplet from the plurality of nozzles at different timings.

25 4. The detecting device according to claim 1, wherein

the detecting means includes a detector that detects a charging state of the refresh ink droplet.

5 5. The detecting device according to claim 4, wherein the detector includes an induced current detecting electrode provided near a trajectory of the refresh ink droplet and a current detector that detects an electric current generated in the induced current detecting electrode.

10 6. The detecting device according to claim 1, wherein the detecting means includes an electric current detector that detects an electric current which flows through the collector when the refresh ink droplet impinges on the collector.

15 7. The detection device according to claim 1, wherein the detecting means includes a wetness detecting electrode disposed inside the collector and a detector that detects a clinging condition of the refresh ink droplet that clings on the wetness detecting electrode.

20 8. The detecting device according to claim 7, wherein the detector detects the clinging condition by detecting change in electric resistance between the wetness detecting electrode and the collector.

25 9. The detecting device according to claim 1, wherein the detecting means includes an emitting member that emits a light flux that passes through a trajectory of the refresh ink droplet, a receiving member that receives the light flux

emitted from the emitting member, and a detector that detects a shielding condition in which the light flux is shield by the refresh ink droplet that flies along the trajectory.

5 10. The detecting device according to claim 1, wherein the collector and the deflection means are formed integral with each other.

11. An inkjet recording device comprising:

an ejection member for ejecting a refresh ink droplet;

10 a controller that controls the ejection member to eject the refresh ink droplet;

a collector that collects the refresh ink droplet;

15 a reflection means for reflecting the refresh ink droplet such that the reflected refresh ink droplet impinges on the collector;

a detecting means for detecting an ejection condition of the ejection member based on the refresh ink droplet.

12. The inkjet recording device according to claim 11, wherein the ejection member further ejects a recording ink droplet onto a recording medium, thereby forming a recording dot on the recording medium, and the controller selectively controls the ejection member to eject the recording ink droplet at predetermined timings and to eject the refresh ink droplet at a timing between the predetermined timings.

25 13. The inkjet recording device according to claim 11,

wherein:

the ejection member is formed with a plurality of nozzles through which refresh ink droplets are ejected;

the detecting means is provided common to all the
5 plurality of nozzles; and

the controller controls the ejection member to eject the refresh ink droplet from the plurality of nozzles at different timings.

14. The inkjet recording device according to claim 11,
10 wherein the detecting means includes a detector that detects a charging state of the refresh ink droplet.

15. The inkjet recording device according to claim 14,
wherein the detector includes an induced current detecting electrode provided near a trajectory of the refresh ink
15 droplet and a current detector that detects an electric current generated in the induced current detecting electrode.

16. The inkjet recording device according to claim 11,
wherein the detecting means includes an electric current detector that detects an electric current which flows
20 through the collector when the refresh ink droplet impinges on the collector.

17. The inkjet recording device according to claim 11,
wherein the detecting means includes a wetness detecting electrode disposed inside the collector and a detector that
25 detects a clinging condition of the refresh ink droplet that

clings on the wetness detecting electrode.

18. The inkjet recording device according to claim 17,
wherein the detector detects the clinging condition by
detecting change in electric resistance between the wetness
5 detecting electrode and the collector.

19. The inkjet recording device according to claim 11,
wherein the detecting means includes an emitting member that
emits a light flux that passes through a trajectory of the
refresh ink droplet, a receiving member that receives the
10 light flux emitted from the emitting member, and a detector
that detects a shielding condition in which the light flux
is shield by the refresh ink droplet that flies along the
trajectory.

20. The inkjet recording device according to claim 11,
15 wherein the collector and the deflection means are formed
integral with each other.